

AD-A115 792

ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/6 4/2  
193158 MLRS MISSILE NUMBER V28-010, V28-011, V28-012 ROUND NUMB--ETC(U)  
APR 82 D C KELLER

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  Meteorological data gathered for the launching of the 19315B MLRS, Missile Number V28-010, V28-011, V28-012, Round Number V250/AT2-19, V251/AT2-20, V252/AT2-21 are presented in tabular form.		

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## INTRODUCTION

19315B MLRS, Missile Numbers V28-010, V28-011 and V28-012, Round Numbers V250/AT2-19, V251/AT2-20, and V252/AT2-21, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 1114:20, 1114:28 and 1114:33 MDT, 27 April 1982. The scheduled launch times were 1100, 1100:04.5 and 1100:09 MDT.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observations

#### a. Surface

(1) Standard surface observations to include pressure, temperature ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm}/\text{m}^3$ ), wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air

(1) Low level wind data were obtained from Pilot-Balloon observations at:

### SITE AND ALTITUDE

WSD	2 Km
DON	2 Km

(2) Air Structure data (rawinsonde) were collected at the following Met Sites.

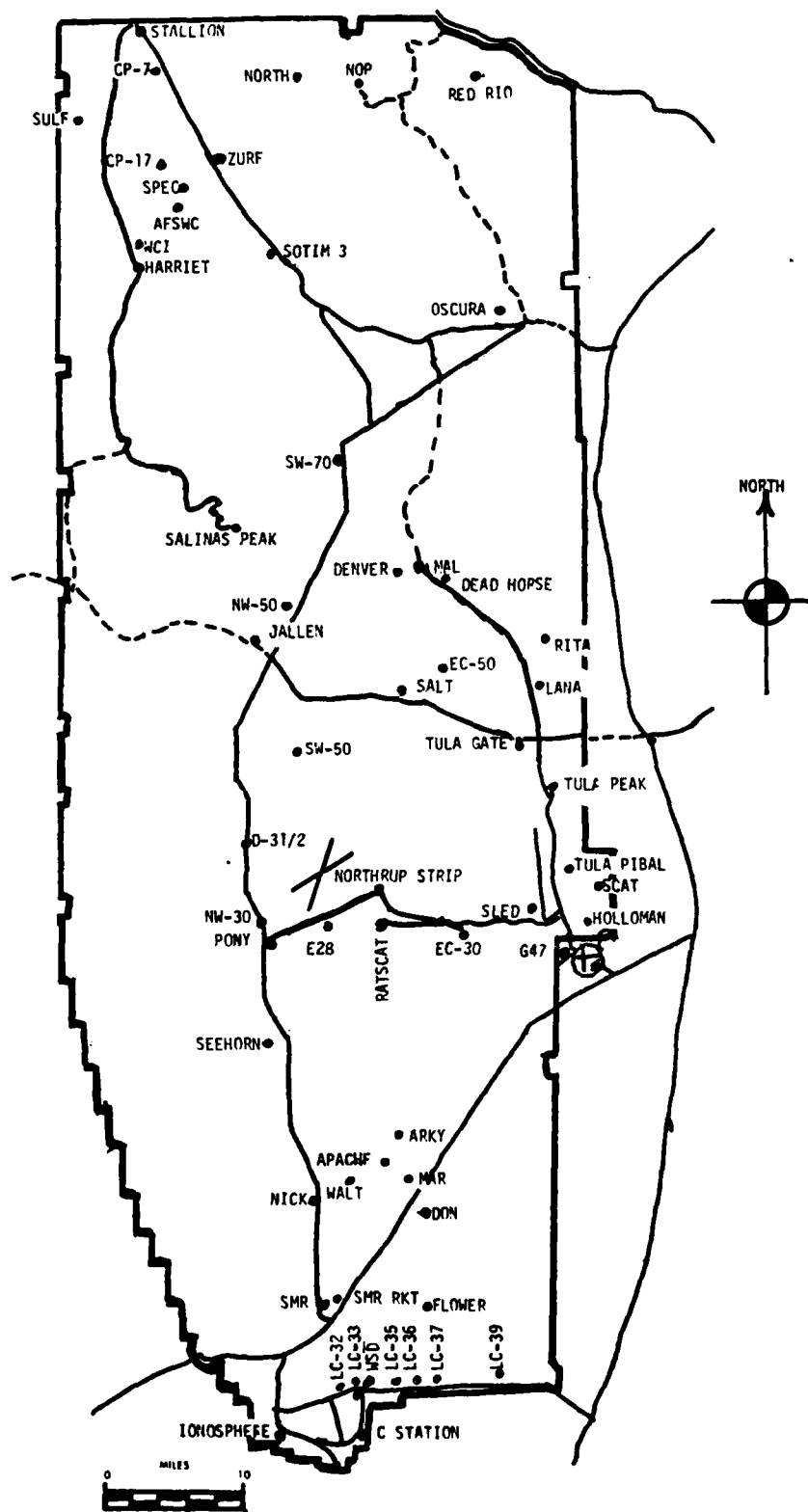
### SITE AND TIME

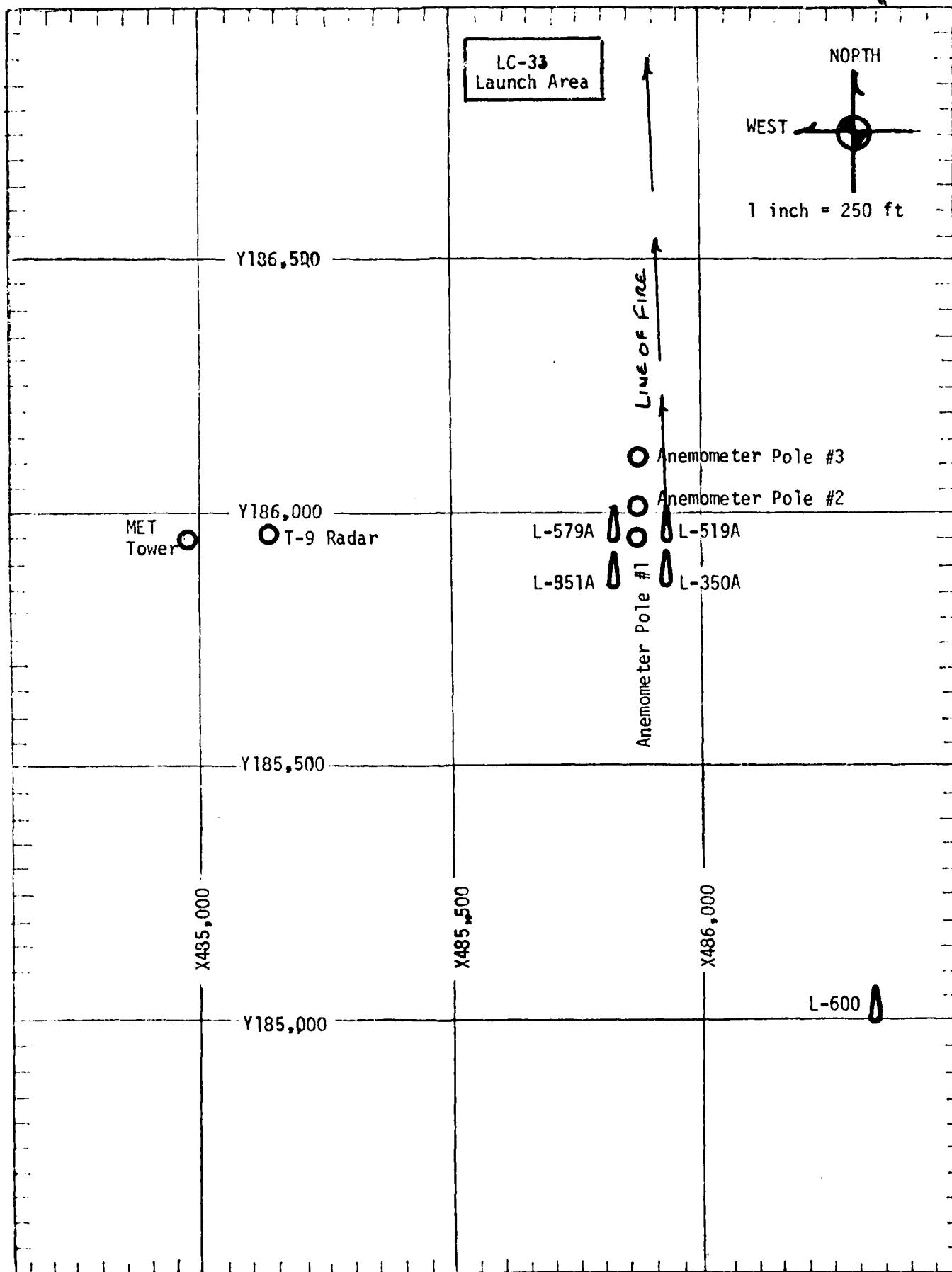
WSD	0800 MDT
LC-37	0900 MDT
WSD	1000 MDT
LC-37	1114 MDT

Accession For	
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DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	



# WSMR METEOROLOGICAL SITES





# PROJECT SURFACE OBSERVATION

TABLE 1		STATION LC-33	
DATE 27	APR 82	Y= 484,982.65	Y= 185,957.73 H= 3995.00

TIME M D I	PRESSURE hPa	TEMPERATURE OF OC	DEW POINT OF OC	RELATIVE HUMIDITY %	DENSITY kg/m <sup>3</sup>	DIRECTION degs In	WIND SPEED kts	CHARACTER kts	VISIBIL- ITY
1114	878.5	24.4	-3.6	15	1025	012	07		40

OBSTRUCTIONS TO VISIBILITY	CLOUDS						REMARKS
	1st LAYER		2nd LAYER		3rd LAYER		
	AMT	TYPE	HGT	AMT	TYPE	HGT	
	4	AS	13,000	6	CS	23,000	

## PSYCHROMETRIC COMPUTATION

TIME:	1114	
DRY BULB TEMP.	24.4	
WET BULB TEMP.	10.4	
WET BULB DEPR.	14.0	
DEW POINT	-3.6	
RELATIVE HUMID.	15	



TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	010	06	T-30	070	04	T-30	087	05
T-20	008	06	T-20	090	07	T-20	069	04
T-10	025	07	T-10	058	07	T-10	013	07
T 0.0	027	04	T 0.0	067	05	T 0.0	045	06
T+10	014	05	T+10	080	04	T+10	037	07

TABLE 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	047	08	T-30	051	08
T-20	047	08	T-20	047	08
T-10	027	07	T-10	045	07
T 0.0	012	07	T 0.0	045	06
T+10	027	07	T+10	051	07

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	041	08	T-30	038	08
T-20	041	06	T-20	036	09
T-10	042	07	T-10	043	10
T 0.0	044	07	T 0.0	053	09
T+10	045	05	T+10	047	06

CONT'D

TABLE 4 CONT'D FROM 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1 X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL			POLE #2 X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL			POLE #3 X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T+20	007	07	T+20	60	06	T+20	054	07

TABLE 5 CONT'D FROM 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.61, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T+20	026	07	T+20	054	06

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982.61, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T+20	045	05	T+20	045	05

27 APRIL 1982

SITE: WSD

TIME: 1114 MDT

LATITUDE:

N= 488,580

W= 185,045

H= 3.989

SITE: DON

TIME: 1114 MDT

LATITUDE:

N= 511,988.37

W= 247,396.36

H= 3,996.83

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	020	04
100	068	07
200	068	05
300	060	07
400	064	06
500	088	03
600	125	01
700	205	04
800	214	04
900	234	06
1000	257	09
1200	249	10
1400	247	11
1600	245	14
1800	257	20

Data obtained from Nike-Herc Radar  
Tracked pilot-balloon observations

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE		CALM
100	048	03
200	043	04
300	033	04
400	024	04
500	021	04
600	019	04
700	244	02
800	234	07
900	242	09
1000	241	10
1200	242	09
1400	248	09
1600	252	10
1800	260	16

Data obtained from Single-Theodolite  
Tracked pilot-balloon observations.

TABLE 7

AIMING AND T-TIME COMPUTER MET MESSAGES  
27 April 1982

WSD 0800 MDT	LC-37 0900 MDT
METCM1324064	METCM1324063
271400122878	271500124877
00622006 28600878	00569004 29120877
01041012 28690867	01010012 29060867
02000000 29160842	02558002 29280842
03467005 29060804	03456006 29090804
04516010 28630757	04472011 28680758
05443013 28210713	05462015 28250714
06434014 27790671	06429016 27810671
07422022 27380631	07413024 27370631
08414030 27030593	08404032 26990593
09446028 26660556	09424031 26610556
10454030 26210522	10439027 26200522
11458028 25720488	11461021 25760489
12476035 25330442	12477035 25460442
WSD 1000 MDT	LC-37 1114 MDT
METCM1324064	METCM1324063
271600122878	271720124877
00053010 29350878	00071003 29670878
01034010 29280868	01081008 29550868
02588003 29250843	02190002 29270843
03469007 29070804	03392005 29070804
04473009 28660758	04451008 28650758
05463014 28250714	05474014 28230714
06448023 27850672	06438023 27920672
07411028 27440632	07436022 27500632
08408032 27030594	08439020 27040594
09438024 26620557	09421023 26590557
10450023 26150522	10425025 26120522
11442025 25790489	11447026 25800489
12473035 25470443	12481035 25530443

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

SIGNIFICANT LEVEL DATA  
1170020176  
WHITE SANDS

TABLE 8

STATION ALTITUDE 3989.00 FEET MSL  
27 APR. 82 0800 HRS MDT  
ASCENSION NO. 176

PRESSURE	GEOMETRIC ALTITUDE	TEMPERATURE AIR	DEWPOINT	REL. HUM. PERCENT
MILLIBARS	MSL FEET	DEGREES	CENTIGRADE	
877.7	3989.0	12.5	-7.0	25.0
869.4	4250.9	13.5	-5.6	26.0
850.0	4777.3	16.1	-2.4	28.0
836.3	5333.3	19.6	.1	27.0
754.2	8214.3	12.3	-5.2	29.0
700.0	10248.1	7.1	-8.1	33.0
627.4	13168.0	-3	-10.0	48.0
601.0	14294.7	-2.4	-12.4	46.0
584.0	15041.4	-4.2	-11.4	57.0
567.0	15805.5	-5.5	-19.9	31.0
525.8	17733.1	-10.6	-20.2	45.0
500.0	18996.8	-14.6	-20.1	63.0
477.4	20142.7	-17.8	-20.5	79.0
454.0	21374.4	-20.2	-21.7	88.0
445.2	21852.3	-19.7	-26.7	92.0
422.4	23134.1	-21.0	-22.7	86.0
400.0	24453.9	-23.0	-24.9	84.0

STATION ALTITUDE 3989.00 FEET MSL  
27 APR. 82 0800 HRS MDT  
ASCENSION NO. 176

UPPER AIR DATA  
1170020170  
WHITE SANDS  
TABLE 9

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	"IND DATA DIRECTION" DEGREES (TH)	SPEED KNOTS	INDEX OF REFRACTION
3989.0	877.7	12.5	-7.0	25.0	1068.7	658.9	350.0	6.0	1.000255
4000.0	877.3	12.5	-6.9	25.0	1068.1	659.0	349.8	6.0	1.000255
4500.0	861.6	14.5	-4.3	26.8	1041.4	661.4	337.5	4.6	1.000252
5000.0	846.3	17.0	-1.7	27.7	1013.5	664.4	316.7	3.6	1.000250
5500.0	831.3	19.2	-2.2	27.1	988.0	667.0	287.3	3.3	1.000247
6000.0	816.5	17.9	-1.1	27.5	974.8	665.5	260.6	3.9	1.000242
6500.0	802.0	16.6	-2.0	27.8	961.7	664.0	274.3	5.0	1.000238
7000.0	787.8	15.4	-2.9	28.2	940.9	662.5	288.4	6.5	1.000234
7500.0	773.8	14.1	-3.9	28.5	936.3	661.0	288.0	7.9	1.000230
8000.0	760.0	12.8	-4.8	28.9	923.8	659.5	286.2	9.3	1.000226
8500.0	746.3	11.6	-5.6	29.6	911.3	658.0	279.1	10.1	1.000222
9000.0	732.8	10.3	-6.3	30.5	898.9	656.5	265.8	10.7	1.000218
9500.0	719.5	9.0	-7.0	31.5	886.6	655.0	255.4	11.6	1.000215
10000.0	706.4	7.7	-7.7	32.5	874.5	653.5	248.4	12.5	1.000211
10500.0	693.4	6.5	-8.1	34.3	862.4	652.0	244.1	13.5	1.000208
11000.0	680.5	5.2	-8.3	36.9	850.2	650.5	244.9	14.3	1.000205
11500.0	667.9	3.9	-8.6	39.4	838.2	649.1	245.1	15.3	1.000202
12000.0	655.5	2.7	-8.9	42.0	826.4	647.6	242.0	17.2	1.000200
12500.0	643.3	1.4	-9.3	44.6	814.9	646.1	239.5	19.2	1.000197
13000.0	631.4	.1	-9.8	47.1	803.4	644.6	236.1	22.4	1.000194
13500.0	619.5	-.9	-10.7	47.4	791.4	643.3	233.4	25.9	1.000190
14000.0	607.8	-1.9	-11.8	46.5	779.2	642.2	233.4	28.2	1.000186
14500.0	596.3	-2.9	-12.1	49.0	767.4	640.9	235.2	29.6	1.000184
15000.0	584.9	-4.1	-11.5	56.4	756.1	639.5	237.2	30.7	1.000182
15500.0	573.7	-5.0	-16.0	41.4	744.5	638.3	241.5	29.6	1.000175
16000.0	562.7	-6.0	-17.8	32.4	733.2	637.0	246.1	28.8	1.000170
16500.0	551.8	-7.3	-19.8	36.0	722.5	635.4	250.0	28.3	1.000168
17000.0	541.1	-8.7	-19.9	39.7	712.1	633.9	252.5	28.3	1.000165
17500.0	530.6	-10.0	-20.1	43.3	701.8	632.3	255.1	28.3	1.000163
18000.0	520.2	-11.4	-20.0	48.8	691.9	630.5	255.7	28.5	1.000161
18500.0	510.0	-13.0	-19.9	55.9	682.4	628.6	256.0	28.8	1.000159
19000.0	499.9	-14.6	-20.1	63.0	673.0	626.7	256.6	28.9	1.000157
19500.0	489.9	-16.0	-20.2	70.0	663.1	625.0	257.8	28.8	1.000155
20000.0	480.2	-17.4	-20.4	77.0	653.4	623.3	258.9	28.8	1.000152
20500.0	470.5	-18.5	-20.8	81.6	643.0	622.0	261.5	29.6	1.000150
21000.0	461.0	-19.5	-21.3	85.3	632.5	620.8	264.4	30.9	1.000147
21500.0	451.7	-20.1	-21.4	89.1	621.1	620.0	267.1	32.3	1.000145
22000.0	442.5	-19.8	-20.9	91.3	608.0	620.3			1.000142
22500.0	433.5	-20.4	-21.7	89.0	596.9	619.7			1.000139
23000.0	424.7	-20.9	-22.5	86.6	586.0	619.1			1.000136

STATION ALTITUDE 3989.00 FEET MSL	UPPER AIR DATA	GEODETIC COORDINATES
27 APR. 82	1170020176	32.40043 LAT DEG
ASCENSION NO. 176	WHITE SANDS	106.37033 LON DEG

TABLE 9 CONT'D

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
23500.0	416.1	-21.6	-23.3	85.4	575.6	618.2			1.000134
24000.0	407.6	-22.3	-24.2	84.7	565.6	617.3			1.000131

STATION ALTITUDE 3989.00 FEET MSL  
 27 APR. 82 0800 HRS MDT  
 ASCENSION NO. 176

MANDATORY LEVELS  
 1170020176  
 WHITE SANDS

TABLE 10

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM.		WIND DATA	
MILLIBARS	FEET	AIR	DEWPOINT	PERCENT		DIRECTION	SPEED
		DEGREES	CENTIGRADE			DEGREES (TN)	KNOTS
850.0	4874.	16.1	-2.4	28.		322.9	3.8
800.0	6574.	16.5	-2.1	28.		276.6	5.2
750.0	8360.	11.9	-5.4	29.		282.9	10.1
700.0	10238.	7.1	-8.1	33.		245.4	13.0
650.0	12220.	2.1	-9.1	43.		240.8	18.1
600.0	14321.	-2.5	-12.3	47.		234.6	29.1
550.0	16566.	-7.6	-19.8	37.		250.4	28.3
500.0	18970.	-14.6	-20.1	63.		256.6	28.9
450.0	21557.	-20.0	-21.2	90.			
400.0	24413.	-23.0	-24.9	84.			



STATION ALTITUDE 4051.37 FEET MSL  
 27 APR. 82 0000 HRS MDT  
 ASCENSION NO. 38

SIGNIFICANT LEVEL DATA  
 1170160036  
 LC-37

TABLE 11

GEOMETRIC ALTITUDE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREE CENTIGRADE	REL. HUM. PERCENT
877.3	4051.4	17.5	21.0
867.7	4358.7	16.1	19.0
859.3	4630.6	17.9	17.0
850.0	4936.2	18.7	17.0
834.0	5471.6	19.6	17.0
741.4	8748.8	11.8	20.0
700.0	10314.8	7.5	26.0
635.4	12901.3	.4	45.0
544.0	16929.2	-8.7	44.0
500.0	19057.6	-14.0	48.0
473.2	20423.0	-18.1	62.0
465.4	20831.0	-18.9	70.0
461.7	21026.7	-18.8	77.0
458.1	21219.4	-17.1	69.0
436.1	22431.3	-18.6	81.0
400.0	24536.8	-22.4	79.0

STATION ALTITUDE 4051.37 FEET MSL  
27 APR. 82 0900 HRS MDT  
ASCENSION NO. 38

UPPER AIR DATA  
1170180030  
LC-37

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

TABLE 12

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CELSIUS	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
4051.4	877.3	17.5	21.0	1049.6	664.8	320.0	4.1	1.000253
4500.0	863.3	17.0	18.0	1034.8	664.1	303.3	3.7	1.000246
5000.0	848.1	18.8	17.0	1010.2	660.2	282.0	3.7	1.000241
5500.0	833.2	19.7	17.0	989.2	667.3	264.6	4.2	1.000238
6000.0	818.3	18.5	17.5	975.7	665.9	251.1	4.9	1.000234
6500.0	803.8	17.3	17.9	962.5	664.5	239.5	6.0	1.000230
7000.0	789.5	16.1	18.4	949.4	663.1	266.7	7.2	1.000227
7500.0	775.4	14.8	18.9	936.5	661.6	266.0	8.9	1.000223
8000.0	761.6	13.6	19.3	923.8	660.2	266.0	10.4	1.000220
8500.0	748.1	12.4	19.8	911.3	658.8	269.4	11.7	1.000216
9000.0	734.6	11.1	21.0	899.0	657.3	268.0	12.9	1.000213
9500.0	721.2	9.7	22.9	886.9	655.7	265.5	14.2	1.000211
10000.0	708.1	8.4	24.8	875.0	654.1	257.6	15.1	1.000208
10500.0	695.2	7.0	27.4	863.2	652.5	248.3	16.3	1.000206
11000.0	682.3	5.6	31.0	851.3	651.0	243.1	17.0	1.000203
11500.0	669.6	4.2	34.7	839.6	649.4	239.1	17.7	1.000201
12000.0	657.2	2.9	38.4	828.1	647.8	237.3	19.5	1.000199
12500.0	645.0	1.5	42.1	816.8	646.2	235.0	21.6	1.000196
13000.0	633.0	.2	45.0	805.4	644.6	231.0	24.0	1.000194
13500.0	620.9	-1.0	44.9	793.4	643.2	228.0	26.3	1.000190
14000.0	609.0	-2.1	44.7	781.6	641.9	225.7	28.3	1.000186
14500.0	597.4	-3.2	44.6	769.9	640.5	225.7	29.8	1.000183
15000.0	586.0	-4.3	44.5	758.5	639.1	227.5	30.9	1.000179
15500.0	574.8	-5.5	44.4	747.2	637.8	231.7	30.7	1.000176
16000.0	563.8	-6.6	44.2	736.1	636.4	236.3	30.5	1.000173
16500.0	553.1	-7.7	44.1	725.2	635.0	240.5	30.2	1.000170
17000.0	542.5	-8.9	44.1	714.4	633.6	243.4	29.8	1.000167
17500.0	531.8	-10.1	45.1	703.7	632.1	244.5	29.0	1.000164
18000.0	521.4	-11.4	46.0	693.3	630.6	247.7	27.3	1.000161
18500.0	511.2	-12.6	47.0	682.9	629.1	252.5	25.3	1.000158
19000.0	501.1	-13.9	47.9	672.8	627.6	255.7	23.6	1.000156
19500.0	491.2	-15.3	52.5	663.1	625.8	258.6	21.9	1.000153
20000.0	481.3	-16.8	57.7	653.7	623.9	260.5	23.1	1.000151
20500.0	471.7	-18.3	63.5	644.2	622.2	261.6	24.6	1.000149
21000.0	462.2	-18.8	76.0	632.5	621.6	266.3	28.5	1.000147
21500.0	452.9	-17.4	87.1	616.3	623.3	269.4	32.9	1.000145
22000.0	443.8	-18.1	83.8	605.5	622.5	270.1	35.9	1.000142
22500.0	434.9	-18.7	80.9	594.9	621.7	269.5	38.4	1.000139
23000.0	426.0	-19.6	80.5	584.9	620.6			1.000136
23500.0	417.4	-20.5	80.0	575.1	619.5			1.000134

STATION ALTITUDE 4051.37 FEET MSL	UPPER AIR DATA	GEODETIC COORDINATES
27 APR. 82	1170180036	32.40175 LAT DEG
ASCENSION NO. 38	LC-37	106.31232 LON DEG

TABLE 12 CONT'D

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES (TN)	SPEED KNOTS	
24000.0	406.9	-21.4	79.5	565.5	618.3			1.000131
24500.0	400.6	-22.3	79.0	556.0	617.2			1.000129

STATION ALTITUDE 4051.37 FEET MSL  
27 APR. 62 0900 HRS MDT  
ASCENSION NO. 38

MANDATORY LEVELS  
1170160038  
LC-37

GEODEIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

TABLE 13

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	4933.	18.7	-6.8	17.	285.5	5.7
800.0	6636.	17.0	-7.4	18.	262.0	0.3
750.0	8424.	12.6	-9.9	20.	269.0	11.5
700.0	10305.	7.5	-10.7	26.	251.7	15.8
650.0	12287.	2.1	-9.9	41.	236.4	20.7
600.0	14387.	-3.0	-13.3	45.	225.4	29.6
550.0	16628.	-8.1	-18.1	44.	241.7	30.1
500.0	19031.	-14.0	-22.6	48.	255.9	23.4
450.0	21626.	-17.6	-19.4	86.	270.6	34.1
400.0	24496.	-22.4	-25.0	79.		

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

SIGNIFICANT LEVEL DATA  
1170020177  
WHITE SANDS

STATION ALTITUDE 3989.00 FEET MSL  
27 APR. 82 1000 HRS MDT  
ASCENSION NO. 177

TABLE 14

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE		REL. HUM. PERCENT
878.0 3989.0	19.8	-3.1	21.0
854.8 4742.9	18.1	-4.5	21.0
850.0 4901.0	18.3	-4.4	21.0
836.0 5368.4	19.4	-4.1	20.0
700.0 10273.4	7.5	-9.8	28.0
581.2 15195.2	-4.8	-13.8	49.0
547.8 16715.8	-8.5	-17.5	48.0
500.0 19016.4	-15.1	-19.3	70.0
472.4 20425.8	-16.4	-18.7	82.0
460.0 21082.5	-17.9	-19.5	87.0
429.6 22760.8	-19.4	-21.0	87.0
400.0 24495.6	-23.0	-24.7	86.0

UPPER AIR DATA  
1170020177  
WHITE SANDS  
106.37033 LON DEG  
32.40043 LAT DEG  
GEODETIC COORDINATES

STATION ALTITUDE 3989.00 FEET MSL  
27 APR. 82  
ASCENSION NO. 177

1000 HRS MDT

TABLE 15

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (IN) SPEED KNOTS	INDEX OF REFRACTION
3989.0	878.0	19.8	-3.1	21.0	1041.9	667.5	30.0	1.000254
4000.0	877.7	19.8	-3.1	21.0	1041.6	667.5	29.9	1.000253
4500.0	862.2	18.6	-4.1	21.0	1027.3	666.1	20.4	1.000249
5000.0	847.0	18.5	-4.3	20.8	1009.6	666.0	355.0	1.000245
5500.0	832.0	19.1	-4.2	20.2	989.8	666.7	295.5	1.000240
6000.0	817.1	17.9	-4.7	21.0	976.2	665.3	266.1	1.000237
6500.0	802.4	16.7	-5.2	21.8	962.7	663.9	268.8	1.000233
7000.0	786.1	15.4	-5.8	22.7	949.5	662.4	269.8	1.000230
7500.0	773.9	14.2	-6.3	23.5	936.4	661.0	268.8	1.000226
8000.0	760.0	13.0	-6.9	24.3	923.6	659.6	268.5	1.000223
8500.0	746.4	11.8	-7.5	25.1	910.9	658.2	262.5	1.000219
9000.0	733.0	10.6	-8.1	25.9	898.4	656.8	259.8	1.000216
9500.0	719.9	9.4	-8.8	26.7	886.2	655.4	259.5	1.000212
10000.0	707.0	8.2	-9.4	27.6	874.1	653.9	258.9	1.000209
10500.0	694.0	6.9	-9.9	29.0	861.9	652.5	258.4	1.000206
11000.0	681.0	5.7	-10.1	31.1	849.5	651.0	253.5	1.000203
11500.0	668.3	4.4	-10.3	33.2	837.4	649.6	248.2	1.000200
12000.0	655.8	3.2	-10.6	35.4	825.4	648.1	243.0	1.000197
12500.0	643.5	1.9	-11.0	37.5	813.7	646.6	237.2	1.000194
13000.0	631.5	.7	-11.5	39.6	802.1	645.2	233.1	1.000192
13500.0	619.6	-0.6	-11.9	41.8	790.7	643.7	231.6	1.000189
14000.0	608.1	-1.8	-12.5	43.9	779.5	642.2	230.3	1.000186
14500.0	596.7	-3.1	-13.0	46.0	768.5	640.7	230.9	1.000183
15000.0	585.5	-4.3	-13.6	48.2	757.7	639.2	231.5	1.000180
15500.0	574.3	-5.5	-14.6	48.8	746.7	637.7	235.4	1.000177
16000.0	563.3	-6.8	-15.8	48.5	735.7	636.2	240.8	1.000173
16500.0	552.4	-8.0	-17.0	48.1	724.9	634.7	245.1	1.000170
17000.0	541.7	-9.3	-17.6	50.7	714.4	633.1	249.5	1.000167
17500.0	531.0	-10.7	-17.9	55.5	704.2	631.4	252.2	1.000165
18000.0	520.6	-12.2	-18.3	60.3	694.2	629.7	252.5	1.000163
18500.0	510.4	-13.6	-18.7	65.1	684.3	627.9	252.6	1.000160
19000.0	500.3	-15.1	-19.3	69.8	674.6	626.2	251.8	1.000158
19500.0	490.4	-15.5	-19.1	74.1	662.4	625.6	250.5	1.000155
20000.0	480.6	-16.0	-18.9	78.4	650.4	625.1	252.8	1.000153
20500.0	471.0	-16.6	-18.8	82.6	638.8	624.4	256.5	1.000150
21000.0	461.5	-17.7	-19.4	86.4	628.8	623.0	259.7	1.000148
21500.0	452.2	-18.3	-19.9	87.0	617.5	622.3	263.6	1.000145
22000.0	443.1	-18.7	-20.3	87.0	606.1	621.7	267.5	1.000142
22500.0	434.2	-19.2	-20.8	87.0	594.9	621.2	35.9	1.000139
23000.0	425.4	-19.9	-21.5	86.9	584.6	620.3	35.9	1.000137

STATION ALTITUDE 3989.00 FEET MSL

27 APR. 82

ASCENSION NO. 177

UPPER AIR DATA

1170020177

WHITE SANDS

GEODETIC COORDINATES

32.40043 LAT DEG

106.37033 LON DEG

TABLE 15 CONT'D

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
23500.0	416.7	-20.9	86.6	575.1	619.0			1.000134
24000.0	408.2	-22.0	86.3	565.7	617.7			1.000131

STATION ALTITUDE 3989.00 FEET MSL  
27 APR. 82 1000 HRS MDT  
ASCENSION NO. 177

MANDATORY LEVELS  
1170020177  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

TABLE 16

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	4897.	18.3	-4.4	21.	2.7	4.3
800.0	6598.	16.4	-5.3	22.	269.2	6.7
750.0	8384.	12.1	-7.3	25.	263.4	10.5
700.0	10263.	7.5	-9.8	28.	257.5	17.6
650.0	12248.	2.6	-10.8	36.	239.9	25.1
600.0	14351.	-2.7	-12.6	45.	230.7	31.8
550.0	16592.	-8.2	-17.3	48.	246.0	24.1
500.0	18990.	-15.1	-19.3	70.	251.6	23.9
450.0	21590.	-18.4	-20.0	87.	264.6	33.9
400.0	24455.	-23.0	-24.7	86.		



STATION ALTITUDE 4051.37 FEET MSL  
 27 APR. 82  
 ASCENSION NO. 39

SIGNIFICANT LEVEL DATA  
 117010039  
 LC-37

TABLE 17

GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
877.9 4051.4	23.2 -6.7	13.0
850.0 4968.0	19.6 -5.3	18.0
836.6 5415.1	18.1 -6.6	18.0
823.7 5851.7	18.7 -5.4	19.0
700.0 10339.8	7.3 -10.0	28.0
673.8 11368.6	5.8 -6.7	40.0
544.4 16950.5	-9.2 -17.7	50.0
500.0 19090.5	-15.3 -19.3	71.0
479.0 20156.8	-15.6 -17.1	68.0
433.2 22638.8	-18.6 -22.1	74.0
400.0 24578.1	-23.3 -26.5	75.0

STATION ALTITUDE 4051.37 FEET MSL  
27 APR. 82 1114 HRS MDT  
ASCENSION NO. 39

UPPER AIR DATA  
1170180039  
LC-37

GEODETTIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

TABLE 18

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CM <sup>3</sup> METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (IN)	"IND. DATA SPEED KNOTS	INDEX OF REFRACTION
4051.4	877.9	23.2	13.0	1030.4	671.2	40.0	2.9	1.000246
4500.0	864.1	21.4	15.4	1020.1	669.2	42.3	1.5	1.000245
5000.0	849.0	19.5	18.0	1008.9	667.0	128.1	.1	1.000243
5500.0	834.1	18.2	18.2	995.5	665.6	213.3	1.6	1.000239
6000.0	819.3	18.3	19.3	977.4	665.7	215.4	3.2	1.000236
6500.0	804.6	17.1	20.3	964.0	664.3	222.5	4.2	1.000233
7000.0	790.1	15.8	21.3	950.9	662.8	227.4	5.2	1.000229
7500.0	775.9	14.5	22.3	936.0	661.3	238.9	6.2	1.000226
8000.0	762.0	13.2	23.3	925.2	659.9	248.1	7.4	1.000223
8500.0	748.3	12.0	24.3	912.7	658.4	256.0	8.8	1.000219
9000.0	734.8	10.7	25.3	900.3	656.9	262.0	10.2	1.000216
9500.0	721.6	9.4	26.3	888.2	655.4	264.0	12.5	1.000213
10000.0	708.7	8.2	27.3	876.2	653.9	264.9	15.0	1.000209
10500.0	695.9	7.1	29.9	863.7	652.7	258.6	18.4	1.000207
11000.0	683.1	6.3	35.7	849.8	651.9	254.3	21.5	1.000206
11500.0	670.4	5.4	40.2	836.6	650.9	249.3	22.9	1.000204
12000.0	657.7	4.1	41.1	824.8	649.3	245.4	23.8	1.000200
12500.0	645.3	2.8	42.0	813.3	647.7	243.7	22.5	1.000197
13000.0	633.1	1.4	42.9	801.9	646.1	242.1	21.2	1.000193
13500.0	621.1	.1	43.8	790.6	644.5	241.9	20.4	1.000190
14000.0	609.4	-1.3	44.7	779.6	642.9	241.4	19.9	1.000186
14500.0	597.8	-2.6	45.6	768.7	641.2	240.6	19.9	1.000183
15000.0	586.5	-4.0	46.5	758.0	639.6	239.9	20.4	1.000180
15500.0	575.4	-5.3	47.4	747.4	638.0	239.4	21.3	1.000177
16000.0	564.5	-6.6	48.3	737.1	636.4	239.3	22.1	1.000174
16500.0	553.9	-8.0	49.2	726.8	634.7	239.9	23.0	1.000171
17000.0	543.3	-9.3	50.5	716.7	633.1	240.4	23.7	1.000168
17500.0	532.6	-10.8	55.4	706.4	631.4	241.0	24.1	1.000166
18000.0	522.2	-12.2	60.3	696.3	629.7	241.7	24.7	1.000163
18500.0	511.9	-13.6	65.2	686.4	627.9	242.4	25.6	1.000161
19000.0	501.8	-15.0	70.1	676.6	626.2	245.0	25.9	1.000158
19500.0	491.8	-15.4	77.5	664.0	625.8	250.3	25.9	1.000156
20000.0	482.0	-15.6	85.5	651.1	625.6	255.8	26.3	1.000154
20500.0	472.4	-16.0	86.1	639.2	625.1	261.4	26.9	1.000151
21000.0	462.9	-16.6	83.2	627.9	624.3	265.6	29.0	1.000148
21500.0	453.6	-17.2	80.4	616.8	623.6	268.6	31.8	1.000145
22000.0	444.6	-17.8	77.6	606.0	622.8	271.2	34.8	1.000142
22500.0	435.6	-18.4	74.8	595.3	622.1	273.3	37.8	1.000139
23000.0	426.8	-19.5	74.2	585.6	620.8			1.000136
23500.0	418.1	-20.7	74.4	576.5	619.2			1.000134

STATION ALTITUDE 4051.37 FEET MSL	UPPER AIR DATA	GEODETIC COORDINATES
27 APR. 82	1170180039	32.40175 LAT DEG
ASCENSION NO. 39	LC-37	106.31232 LON DEG

TABLE 18 CONT'D

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES (TN)	SPEED KNOTS	
24000.0	409.6	-21.9	74.7	567.5	617.7			1.000131
24500.0	401.3	-23.1	75.0	558.7	610.2			1.000129

STATION ALTITUDE 4051.37 FEET MSL  
27 APR. 82  
ASCENSION NO. 39

MANDATORY LEVELS  
1170160039  
LC-37

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LON DEG

TABLE 19

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	4964.	19.6	-5.3	18.	111.2	.1
800.0	6665.	16.7	-6.0	21.	224.4	4.5
750.0	8451.	12.1	-7.7	24.	255.3	8.6
700.0	10330.	7.3	-10.0	28.	260.5	17.3
650.0	12318.	3.3	-8.5	42.	244.3	22.9
600.0	14426.	-2.4	-12.5	45.	240.7	19.9
550.0	16668.	-8.5	-17.1	50.	240.0	23.3
500.0	19064.	-15.3	-19.3	71.	246.3	25.9
450.0	21669.	-17.5	-20.2	79.	269.8	32.9
400.0	24537.	-23.3	-26.5	75.		

**DAT**  
**ILM**